

# JACG JACG

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THE JERSEY ATARI COMPUTER GROUP

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## In This Issue

### From the Editor's Desk...

The Special Interest Group is an interesting animal. Many user groups profess to have all kinds of them, yet when you try to get in touch with someone in that SIG's specialty it often turns out it is a SIG in name alone. A little like the phony war hero who has a chest full of dime store ribbons he never won.

We have tried SIGs before in JACG and they mostly never flew. Sure, they met for a while, but not very much came out of them. I am pleased to report that is no longer the case. We have a SIG that is really cooking and chugging. It is called the Robotics SIG and has proved to be extremely productive. Under the initiative of Bill Brandt the group has grown in size and sophistication. They are well organized and even publish a monthly newsletter, whose motto is "We Aim To Serve" (groan).

This month the robotics group is featured at our meeting. They are going to show you just how much amazing stuff can be done with your Atari computer, under fifty dollars worth of hardware, and a lot of hard work and imagination. The story of their early work is contained in an article, "Robotics...The First Step", which shows you how to get started.

We are proud of the work these folks have done. Many others will be turned on to this interesting subject by their efforts. Let them be the example to spur you on to create a truly active SIG of your own. You can't help but be a winner.

Frank Pazel  
Editor-in-Chief, JACG Newsletter

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### MARK YOUR CALENDARS!!

#### JACG Meeting Schedule

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April 12, 1986

May 10, 1986

June 14, 1986

July 12, 1986



## THE VIEW FROM WHITE HOUSE.

The Presidents' message.

by Bill Martin

HOT LINE TO THE PRESIDENT. - (201) 534-6349

HELP WANTED APPLY HERE!

**PRESIDENT WANTED.** The J.A.C.G. meets at Bell Labs in conjunction with the Bell Lab's Atari Computer Club. The group actually does exist and has been functioning under the leadership of Herb Lehner for some time now. It seems that Herb has decided to take a well deserved vacation and he feels that it is time for the Bell Labs club to choose a new president. There are conditions though. The candidate must be a Bell Labs employee preferably (but not necessarily) in Murray Hill. This is an extremely important position, for the J.A.C.G. because the conjunction meetings allow us the use of the facilities. Please call me if you can help us out.

**Sales Manager.** We're still looking!!! Coordinate group purchases. Develop and facilitate a plan so that members can sell (through the sales department) individual pieces of used software. No experience necessary. Pre-requisites are honesty and attendance at monthly meeting. See me or call me on the Hot Line.

**DEMONSTRATOR'S At The Meeting.** Always looking. We are always in need of people to demonstrate soft/hardware at the meetings, especially teachers or people who are experienced public speakers. We will even arrange to loan you the software to demo. Call Jerry Frese.

**LANGUAGE SIG TEACHERS.** We are STILL looking for teacher's of Basic, "C", and Assembler to start up some new SIGs. Contact Scott Brause.

Our Advertising Director, HELENE ROTONDO, has had to resign her position due to personal reasons. Both she and I regret her having to make this decision. She was a definite asset to her post and we are sorry to lose her.

It is, with pleasure though that I announce the appointment of CHUCK SILVERSTEIN to fill Helene's vacated position. Chuck is a fellow Air Force vet who agrees with my theory that the club should be run like a business. Thanks for volunteering Chuck.

Our search for Hotline workers and disk librarians has been rewarded. PETE SMITH from out in my neck of the woods has signed up for both jobs. MIKE CASELLA, for the hotline and ERIC JACOVES for library assistance. Thank you gentlemen! We appreciate it!

**MORE FIRMWARE!** Happy has finally shipped it's controller board for the 1050 Happy Enhanced drive. Buying it is easy. It's the installation that gets you. Ask me how one blows out a perfectly good drive? The installation is actually easy, it's just that the instructions, written by Rich Adams, Scott Adams' (Adventure

International) brother, are an Adventure in themselves, (pun intended). It took me 2.5 hours to muddle through the documentation when a diagram inserting "A" into "B", "C" into "D" and "E" into "F", plus a little cutting of plastic on the inside cover were all that is required. He makes Everest out of a bump in the road, but I'll have to give him credit for trying to help, which is more than most will do. He spent at least 30 minutes, walking me through some tests to see if we could find the trouble. With support like that, I can wait a long time for REV. 7. I didn't even have the heart to ask him about it when I talked to him.

**WHY DID THE DRIVE GO?** I'm not sure if it was due to the controller installation or if it "just happened", but there's a little "C" shaped light emitting diode and collector off to the side of the read/write head. As I understand it, it helps the read/write head find the zero track. It's worth about \$.50 cents but no one will sell you one. You have to buy the entire drive mechanism for anywhere up to \$90.00. At that price, I'll buy a new drive and keep the old one for spare parts. Better still, I have an idea. Let's create a PARTS CO-OP within the club. If you have a piece of hardware that you want to get rid of because it will cost too much to fix, donate it to the club. I'll even volunteer to keep the units in my basement. We have a similar procedure in our Honda car club that I started up about 5 years ago that's working out famously. Note that I don't keep used cars in my basement. What we did was to buy regularly used items in bulk and sell them back to the membership at cost. Let me know what you think?

After threatening Digital Devices of Atlanta on how I was going to tell every member of the group on them for their policy of retrofitting the graphics chip (which should have been in the interface in the first place) they have changed their minds. What was \$35 dollars is now \$6.00. Why, they even sent me a loaner interface that works with graphics. It appears that the fix for the 64K buffer model is still in the making and they have promised to call me when it's ready. Meanwhile, I don't have to jump over to my 800 with the MPP 1100 installed whenever I want to printout a file. Congratulations Digital Devices, you've recognized responsible computing. This bull dog is officially off your tail!

Incorporation procedures have hit a stand-still awaiting Atari's response to our request for permission to use the word Atari in our name. My letter to Dave Duberman, former user group support, arrived after Dave left Atari. As I understand it, there are other clubs that are incorporated that do use the word "Atari" so it's a mute point. It's just that Scott (who is in charge of procedure), and I, want it done "right the first time". We WILL persist and accomplish our goal.

Our brochure is coming right along. We've had to make extensive corrections to the copy such as the opening of Route 78 (a-hem!). and we've also decided to eliminate anything that might date the piece such as listing the dues as \$20 per year, as

they may go up at some time in the future. This way we can increase the printing and decrease the cost per piece, spreading it over a few years rather than for a limited time. We've decided on an initial printing of 5000 copies. We will mail to prospective members and distribute to area dealers who have offered to cooperate. Target date for the finished copy is February 28th, 1986. As an added note, Frank Pazel read a letter about a club that died because they got too big. Even in the end they did not realize that it was poor management, rather than size that did them in. If Bell Labs were to change its policy and not allow us to have our meeting there, we could find some other place, but it might cost us. That's one of the reasons that I want to get the cost of the newsletter down to a figure that represents only about 75% of the dues. Last year, the newsletter cost us \$2500.00 more than the dues we had collected and that's not the way to do business. If nothing else is accomplished in my administration other than to make the club financially self sufficient, I will be satisfied.

Special thanks to Gemini for donating Music Painter by Atari and The Learning Phone (Plato) also by Atari for the February meeting. The Learning Phone was demonstrated at a meeting in the past but if we can arrange for some "COMP." time we'll do it again.

Special thanks to Software Spectrum for donating Archon II (the Adept) by Electronic Art's, together with Spellakazam and Spellagraph, both by DesignWare for March door prizes. Enjoy, and I'll see you in April.



## Question And Question Column

by Patrick C. Madden, II - JACB

If I write it, it's got to be a question and question column. If somebody up there in JACB-land writes it, it could become a question and answer column. There is a Q & A session at the beginning of each JACB meeting; why not publish it the following month for those of us who weren't there (I live 1200 miles away), or didn't hear, or just didn't know enough to realize that they would have that same question later? Just to get you started, here's a question for you:

1. How do I get my Epson printer into graphics mode?

## Chop Suey Forth (Part one of three)

By Donald Forbes--JACB

D: Hello, Lee! How is Mr. Chan today? Ni hao bu hao? You good not good?

L: Hello, Don. Wo hao, she-she. Me good, thank you. When are you going to learn to speak Chinese properly? If you were Chinese, I would call you a 'hollow log' or even a 'banana'--yellow on the outside and white on the inside. But, no matter, I need your help. You know computers. My uncle in San Francisco left me his restaurant, the Teahouse of the September Morn, and I want to run it like a business, computers and everything.

D: I have a good book here, Lee, written a couple of years ago by a German expert, Ekkehard Floegel, called 'Forth on the Atari.' He has written at least five introductory tutorials on Forth in the past two years, including one in German called 'Einfuhrung in Forth' which have been published in a European journal called 'Computer Applications in the Laboratory.' I bought his book at a bargain sale for one dollar plus two dollars in postage from Elcomp Publishing at 2174 West Foothill Blvd in Upland CA 91786. We might be able to pick up some ideas.

For example, he shows here on page 15 how we can do simple translations of the items on the menu. How about this?

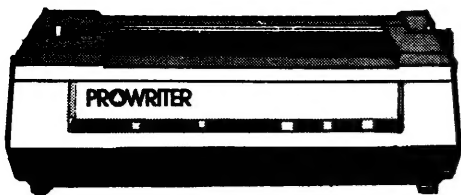
```
: CHOP-SUEY ." Chop suey " ;
: BLACK-TEA ." Hung cha " ;
: GREEN-TEA ." Ching cha " ;
: BEAN-CURD ." Dau foo " ;
: BEEF ." Ngow yuk " ;
: CHINESE-CABBAGE ." Bok choy " ;
: CHICKEN ." Gai " ;
: DUCK ." Opp " ;
: ROAST-DUCK ." Shew opp " ;
: LAMB ." Yeung yuk " ;
: ROAST-PIG ." Siew gee yuk " ;
: LOBSTER ." Lung har " ;
: NOODLES ." Mein " ;
: COOKED-RICE ." Fan " ;
: SOY-SAUCE ." See yu " ;
: SOUP ." Tang " ;
: SPARERIBS ." Pai goot " ;
: CHOPSTICKS ." Fi gee " ;
```

Now you can type in your order for SOUP with ROAST-DUCK and NOODLES served with GREEN-TEA and have the order come out in Chinese.

There is also a program here on page 16 to compute the calories in a person's diet. We could adapt it to a Chinese menu. Then we could call it a 'waist-watchers' diet for people who want other people to watch their waists. How about something like this?

First we define the units of measurement with

```
: CUP DROP + ; : CUPS * + ;
: BOWL DROP + ; : BOWLS * + ;
: DISH DROP + ; : DISHES * + ;
: PIECE DROP + ; : PIECES * + ;
: POT DROP + ; : POTS * + ;
: ORDER DROP + ; : ORDERS * + ;
```



## Custom Line Feeds For Your Prowriter Printer

by Frank Pazel - JACG

Have you ever wanted to adjust the length of a printed page so the space is better used? You have written a letter which is to be printed on custom stationery. When you test print it you find that it's just a little too long to look nice. So you have to edit out some lines. Or you are trying to impress the boss with the length of the memorandum you've written but it just isn't fat enough. Sure, you can double space it, but that's high school league and makes your ineptness really obvious. What is a body to do?

If you check the technical manuals of most printers you should discover instructions covering methods of changing the vertical line feed. It may be as simple as changing the position of a single DIP switch or it may require the embedding of control codes within the text file. The former is usually easy, the latter may not be.

This article addresses the use of embedded codes for the C. Itoh Prowriter printer, a machine I feel is one of the most solidly built and dependable pieces of equipment I've ever owned. I run about four cases of paper through it every year (about 10,000 sheets) and in three years it hasn't faltered yet. While travelling I have discovered the Pro disguised in black and grey cases zipping along behind hotel reservation desks and airline counters. It's a heck of a printer and I am disgusted not to find it as a standard printer on the menu of the new Atariwriter Plus (but Juki is???). So much for my endorsements and vitriol.

As editor of this newsletter the need to shrink or enlarge articles is obvious. Too many times I am forced to literally cut and paste before going to our standard 75% reduction. It dawned on me that it was time to make the printer add or subtract just a little space between lines to gain the same effect. Turning to Appendix page A5-2 revealed that by embedding an ESCape A the line feed would be set to 1/6th inch and an ESCape B would give me 1/8th inch. Good beginning but not the answer to full flexibility.

Aha! "Custom line feeds: sets nn/144 inch spacing between lines" read the details. Example: ESC T, nn. How easy. Into the editor of Atariwriter I zip. Now let's see, that means type CTRL-0 27 (for

ESCape) followed immediately by CTRL-0 84 (for T). Very easy. Now a comma followed by the denominator over 144 desired. Well, default seems to be 1/8th inch which is 18 so I guess I'll type in 22, just to see what happens. The printer comes to life, prints a nice 22 followed by no changes in line feed. Challenge time has arrived.

Back in the editor I insert a space between the comma and the 22. That's how it is in the manual. Mr. printer repeats his previous performance. Darn! Now what? It sort of crosses my mind that the printer needs to be prompted before each code by an escape so here goes a new idea. New format: CTRL-0 27 CTRL-84 CTRL-0 50 CTRL-0 50. The 50 is the ATASCII code for 2 so, hopefully, I am sending an ESC T 22/144 line feed command to the printer.

Cross the fingers and press RETURN. Gotcha! The Pro obeys like a cat at feeding time. The test looks exactly like it did horizontally but the vertical feed is substantially reduced. Voila! The code is broken!

Next step, try different values. Everything works. Here are some samples of the same text with different line feeds:

This is an example of using the Prowriter printer with a line feed of 22/144 inch. The code is four CTRL-0s, each followed by 27, 84, 50 and 50. This seems to be the default value, not 18.

This is an example of using the Prowriter printer with a line feed of 18/144 inch. The code is four CTRL-0s, each followed by 27, 84, 49 and 56. The lines are closer.

This is an example of using the Prowriter printer with a line feed of 16/144 inch. The code is four CTRL-0s, each followed by 27, 84, 49 and 54. The lines are difficult to read.

This is an example of using the Prowriter printer with a line feed of 26/144 inch. The code is four CTRL-0s, each followed by 27, 84, 50 and 56. Not quite double spacing.

So there you have it. One caveat; once you change the line feed you have confused the page length (Y132) command of Atariwriter. This is not a big problem but be aware that the printer may want to print over perforation or stop sooner than you expect. Simply make a draft print and do your adjustments or insert another CTRL-Y 132 after your customizing. It's a small price to pay for this degree of control.

I love the way my Prowriter jumps through the hoop anymore without having to beat it with a Byte Bat! The commands for this ending are:  
Four CTRL-0s, each followed by 27, 84, 49 and 56, CTRL-62, CTRL-L15, CTRL-R47. See how easy it is once you know how?

**JACG HOTLINE 534-6349**  
**GET THE LATEST NEWS ON ATARIWORLD**

## FEBRUARY MEETING HIGHLIGHTS

Reported by  
Joseph S. Kennedy

The meeting was preceded by the usual question and answer period, lead this month by Jerry Frese. At ten a.m. President Bill Martin opened the meeting with several announcements. He informed us that we will have to make minor changes in the bylaws in order for incorporation. The Robotics SIG will have a demo at the March meeting. Scott will preside over the March meeting which will have about 40% of its content on new ST demos. Scott looked for a show of hands as to potential volunteers to help at the Trenton Computer Fair.

Jim Callari demoed Eidolon by LucasFilm and distributed by Epyx. In Eidolon you must navigate through caves collecting crystals; destroying assorted creatures; and finding and slaying the dragon of the cave. To help you find your way through the caves to the dragon you're supplied with a 'hot and cold' meter. The graphics are good but they don't seem to be sufficient to require the 64K it takes. (Yes! That's right folks! If you got an 800 don't get Eidolon; it requires an 800XL or a 130XE.)

Joe Kennedy demoed two programs from the Disk Library that will help you to make financial decisions. The first was MORTGAGE from Volume #070. This program gives monthly payments and yearly amortization for the life of the loan. The second LOANSHRK from Volume #072 compares on screen up to 15 different scenarios and will even figure out how much you can borrow depending on how much you want to spend.

Phil and Andy Greenhut demoed WORD MAGIC, \$19.95 from the Antic APX catalog. This word processor seems to have most of the same features of AtariWriter+ and it also comes with GRAPHIC MAGIC for inserting graphics into your text. WORD MAGIC is also compatible with SPELL MAGIC and DATA MANAGER XL. WORD MAGIC is a product of Blue Collar Software and looks like quite a package for the money. looks like someone other than Atari believes in power without the price.

Jerry Frese demoed Tax Advantage from Arrays/Continental Software. This program prepares your taxes and will even accept data from the Home Accountant program. With this program you can check the effects of various scenarios on your final tax burden. The Tax Advantage also puts you in the position, when called in for an audit, to blame it all on - THE COMPUTER. And if that doesn't work it is still tax deductible next year.

Frank Pazel reported on a case of a pirated copy of the Print Shop destroying certain chips in a U-Print buffer. Also that Sesame St. had a show in which Ataris were used instead of Apples for a change. Frank also reported on the demise of the

125 member Quebec 8-bit Atari group due to a lack of a meeting place. (Think about it! Then be thankful to Bell Labs.) Frank reported on some new additions to the Print Shop Utilities program developed by Tom Pazel. One new feature is that when converting to Visualizer files the Print Shop graphic requires only one color register now. Frank also showed us how the Atari Keypad can be programmed for aid in data file programming. A new feature of the meetings was instituted at this time 'Frank's Goldy Oldies' - those early programs for the Atari that still deserve some attention today. This month Frank showed us Galactic Chase, a predecessor to Galaxian and, from the old APX, Salmon Run. In this program you are Sam the Salmon swimming upstream avoiding bears, birds, fishermen and dams to mate with Samantha Salmon.

Bill Martin demoed Atari Music Painter. In this program you can enter your favorite music in three voices with different instruments. It comes with a number of music files on the disk so that it can be used immediately.

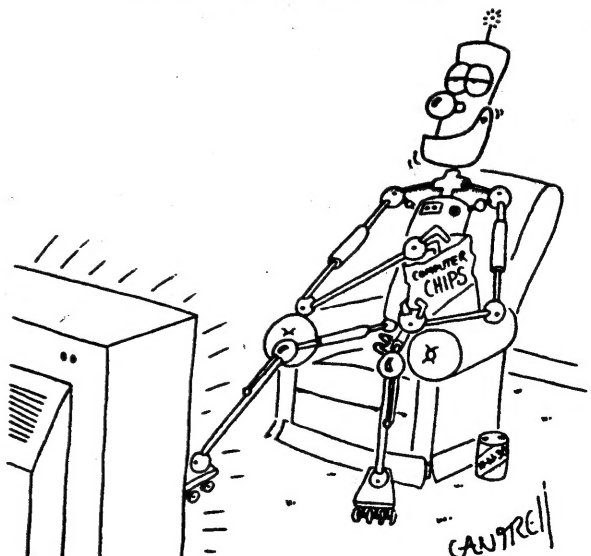
Dick Kushner gave us a slide tour of the Consumer Electronic Show in Las Vegas. It was a tough job but someone had to do it. Thanks Dick, for an interesting show. Scott Brause demoed Backgammon on the ST as a preview to some of what we might see at the next meeting.

This month we raffled off a Learning Phone package and the Atari Music Painter, courtesy of Gemini. The Learning Phone was won by Gregory Busch and the Music Painter was won by S. Wisniewski - Congratulations. You got to be there to win.

The topics of the upcoming meetings are:

March - Education  
April - Graphics  
May - Atari Safari

\*\*\*\*\*  
GIVE A BIT!!  
\*\*\*\*\*



Pokey Press



# ATARI 1020 Printer Plotter "Print 'n Draw" & LOGO

Charles P. Lichtenwalner - JACG

I recently purchased an ATARI 1020 Printer/Plotter, and finding it one of the most fun peripherals, I would heartily recommend it to other ATARI owners.

The 1020 Printer/Plotter is a 4 color printing device which connects directly to (8 bit) ATARI computers. Black, red, green, and blue pens fit in a cylindrical printhead which travels across the paper while the paper moves up and down on its roller. The major advantages of the printer are its low price (I bought mine mail order for \$30.00 + shipping), availability of multicolors, capability of both printing (20, 40, or 80 columns) and graphing, no interface required, and fun of watching it operate. The major difficulty is that it will only take paper 4 1/2 inches wide.

If you are willing to put up with the limitation of the narrow paper and purchase a 1020 you may also want to consider a program called "Print 'n Draw" from Terrific Software. Print 'n Draw is basically a "Print Shop" type program for the 1020. With it you can create banners (letters rotated 90 degrees on the paper) in any of the 4 colors, alternating colors, or a rainbow of all four colors for each letter, in any of 10 font styles, in any of 60 sizes up to the full width of the paper--you get the idea--plenty of options. After tiring of printing banners you can go on to make a pie chart of any data you may want to present along with corresponding labels (including percentages or values if desired) and a title. A third option draws any of 26 pictures found on the back of the disk (variable size, orientation, position, etc.) There is also a conversion program for plotting "Graphics Magician" files if you are into drawing your own pictures. Finally there is a typesetter with even more options than the banner printer. All in all a very useful program which is an ideal companion to the 1020 Printer/Plotter. I especially appreciated the fact that the program is not copy protected and written in Basic, as I needed to configure the ATR I use as an interface to my disk drives and regular printer. It was a trivial matter to load a file with a program to reconfigure the ATR, and insert a line in the startup file to run the reconfiguration before Print 'n Draw calls its title screen.

While watching the 1020 draw its lines on the paper I was reminded of early work on teaching children geometric and mathematic concepts using turtles which were small wheeled robots (resembling turtles) which could move around on the floor leaving a trail of their path with an attached pen. As the movement of the 1020 pen and the paper seemed to resemble these turtles, and I have always been interested in attempting to make a permanent record of turtle graphics in LOGO, I wrote the following procedures to drive the 1020 Printer/Plotter.

```
TO PLOTON
SETWRITE 'P:
TYPE CHAR 27
PR CHAR 7
END
```

```
TO PLOTOFF
SETWRITE []
END
```

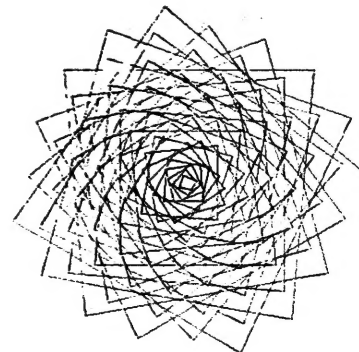
```
TO F :LNGTH
MAKE "XC XCOR
MAKE "YC YCOR
FD :LNGTH
PLOTON
TYPE "C PR REMAINDER COLOR 4
MAKE "XC XCOR - :XC
MAKE "YC YCOR - :YC
IF PEN = "PU [TYPE "R TYPE ROUND :XC TYPE ",
PR ROUND :YC] [TYPE "J TYPE ROUND :XC TYPE
", PR ROUND :YC]
PLOTOFF
END
```

```
TO B :LNGTH
MAKE "XC XCOR
MAKE "YC YCOR
BK :LNGTH
PLOTON
TYPE "C PR REMAINDER COLOR 4
MAKE "XC XCOR + :XC
MAKE "YC YCOR + :YC
IF PEN = "PU [TYPE "R TYPE ROUND :XC TYPE ",
PR ROUND :YC] [TYPE "J TYPE ROUND :XC TYPE
", PR ROUND :YC]
PLOTOFF
END
```

```
TO HOMEP
WINDOW
PLOTON
PR "H
TYPE "M240,-240
PR CHAR 13
PLOTOFF
END
```

These routines allow you to use the regular LOGO turtle commands. If you want a plot of the turtle graphics simply replace FD or FORWARD with F and BK or BACKWARD with B. Thus if you want to plot spirals make a procedure like:

```
TO SPIRAL :DIST :ANG
F :DIST
RT :ANG
SPIRAL (:DIST + 2) :ANG
END
```



SPIRAL 5 95

?PR [SPIRAL 5 95]

Then try something like SPIRAL 5 95 for a pretty spiral plot on both the screen and the 1020 Printer/Plotter. I usually use HOMEY to set the 1020 pen in the middle of the paper (similar to HOME) before running any plotting procedures.

If you want to change the color of the pen use the SETC command to change the turtle's color. The line TYPE "C PR REMAINDER COLOR 4 uses the remainder procedure to set the 1020 pen color according to the remainder of the value COLOR after dividing by 4.

Our local elementary school teaches LOGO programming to first and third graders. With current ATARI prices it seems to me that you could set up very inexpensive LOGO systems for teaching with \$70.00 800XL computers, \$30.00 Printer/Plotters, \$35.00 LOGO cartridges, and \$???.00 televisions. I know one second grader who is having a great time with such a system.

## PDG

by Joseph S. Kennedy

Education - about it Daniel Webster said that "on the diffusion of education among the people rest the preservation and perpetuation of our free institutions". What better way to diffuse education than the Atari computer and power without the price. The JACG Disk Library is one of the best sources of power without the price.

Educational software can be something as straight forward as a simple math drill to something as realistic as a flight simulator or a stock market game. What I'll try to do in this column is cover both the obvious and the less apparent. The most obvious are those volumes dedicated to educational topics so let's look at them first.

### Volume #005 - Education #001

This disk contains several different guessing games; some basic drawing programs; math drills; math functions; and states and capitals drills for the US and also the western hemisphere.

### Volume #006 - Education #002

There is a large variety of programs on this disk. Several math drills, including a number list recognition program; a rather good spelling drill that flashes the word briefly then asks you to spell it on the keyboard; a metric conversion program; and a program that computes Julian and sidereal time for the astronomers out there. But my favorite program on this disk is the GEOQUIZ which asks you a series of questions to determine which country you are thinking of.

### Volume 12 - Education #003

This disk has only one math drill but it is a good one. There are two hangman guessing games one of which asks you to guess famous quotes (No Pat doesn't ask you to spin the wheel before each guess.) There are two science programs; one is a chemistry drill; the other calculates

volumes, density, solubility and fraction conversions. My favorite program from this disk is HOMEWORK. This program allows you to enter questions and answers on any subject. In fact, you can enter two answers if you so desire. The program will give you the correct answer(s) after three tries. It will also give you a list of those questions you miss that require further study. With very little effort you can have this list dumped to a printer. This program alone is worth the \$5 for the disk.

### Volume #028 - Education #004

This disk has several plotting programs for Cartesian, Circular and Polar co-ordinates. A statistics program will analyze your data. Math drills are here including one that will print out a series of problems. A drawing program is also available.

### Volume #055 - Education #005

On this disk you can learn Morse code or Spanish. With the Spanish program you can enter the word combinations for any language. If you have the S.A.M. software voice, there is a program that will ask you to spell the words that are entered in the data statements. A word scramble game will help you learn to spell. The ABC Train will help the young ones learn the ABC's. And, of course, there are two math drills.

Okay, that's the straight forward education disks but these are not the only disks that will help diffuse education with your Atari. For instance, on Volume #003 - Games #003, you can learn the intricacies of running an electric power plant in ELECTRIC. Volume #008 - Games #005 has several simulations including one for running a nuclear power plant (Three Mile Island in your living room). But games to learn from are not limited to simulations. On this same disk is ARTILL, a program where you fire a cannon at your opponent. You must allow for wind, power, angle and range. Trig in action.

I think you get the idea by now that the Atari, together with our disk library, is a great way to diffuse education. So get out there a make old Daniel happy.

```
*****
*           J           *
*GIVE A BIT!!*
*           C           *
*           G           *
*****
```

OOOPS!, Again  
8 Bit Demos  
From Leyenberger

In the heat of passionate excitement generated by the Boink! and Fuji Boink! demos shown at the February meeting credit was not given for their source, our own Arthur Leyenberger. Art went to some trouble to get these demos early for us and we apologize for omitting credit where credit was due.

Please keep bring us the goodies, Art, we really do appreciate your work.

# The Mathematics of Mathematics (5)

Copyright 1986 Donald Forbes---JACG

How are new discoveries made?

We can read in Morris Kline's 1959 book on 'Mathematics and the Physical World' that "Newton proved that the same force kept the planets in their paths as pulled objects to the earth, and he did so by showing that the same mathematical law governed all gravitational attractions."

"His proof is a classic of scientific reasoning. The popular account, that Newton appreciated the universal action of the law of gravitation when, while dozing under an apple tree, an apple hit him on the head, is obviously nonsense since the fall of an apple involves only the pull of the earth on objects nearby.

"The mathematician Gauss said that Newton told this story to get rid of stupid persons who asked him how he discovered the law of gravitation. The true account of Newton's thinking is a little deeper."

It is tempting to relate that one can discover a model for the conceptual structure of abstract mathematics by staring out of a window with sixteen square panes. Here, again, the story is more complicated.

To be a research mathematician or an applied mathematician, it is important to have an overview of abstract mathematics.

The best way is to construct a mathematical model of the subject matter of mathematics. In a sense, mathematics is the science of modeling. It is most appropriate, therefore, to turn mathematics back on itself to create a model of its own subject matter.

The field is wide open. Anyone with paper and pencil is free to construct his own model of the mathematical sciences, and to defend it if he can. Neither the research mathematicians nor the applied mathematicians nor the computer scientists have invaded the territory.

You will find no references in the math journals, other than discussions of the philosophy of math, or articles on the Metamathematics of Mathematics.

But there are no mathematical models. The closest you will come will be an article in the August 1981 issue of the American Mathematical Monthly of the Mathematical Association of American by Saunders Mac Lane on "Mathematical Models: A Sketch for the Philosophy of Mathematics" which starts out with: "The aim of this note is to encourage a renewed study of the philosophy of mathematics, a subject dormant since about 1931..."

Remember, however, the wise words from that manual of statecraft 'The Prince' by the inimitable Niccolo Machiavelli in which he says: "It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage, than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely the lukewarm defenders in those who would gain by the new ones."

Therefore it is important to understand, at the outset, certain features of the model

we have recently presented here. The model presents a convenient set of pigeonholes in which to allocate the chronological developments of pure mathematics (Logic, Geometry, Algebra, Calculus, Topology):

!	C	!	GC	!	GCT	!	CT	!
!	AC	!	GAC	!	GA	!	ACT	!
!	A	!	GA	!	GAT	!	AT	!
!	L	!	G	!	GT	!	T	!

The model is not a trivial tool, despite its seeming simplicity. The model provides a convenient way to show how abstract mathematics unfolded over the years. First, logic unfolded into axiomatic geometry:

!	logic	!	logic	!	geometry	!
---	-------	---	-------	---	----------	---

Next came the unfolding into algebra and then algebraic geometry:

!	algebra	!	algebraic	!	geometry	!
!	logic	!		!	geometry	!

Next came the unfolding that added the calculus, followed by differential geometry, differential equations, and functions of a complex variable:

!	calculus	!	diff geom	!
!	ODE PDE	!	f. of compl var	!
!	algebra	!	algebraic geom	!
!	logic	!	geometry	!

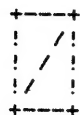
The final unfolding, along the right margin, added modern abstract mathematics (from 1874 to 1945) starting with set theory and the topology of point sets through measure theory and functional analysis.

The model is based on a Karnaugh map or Veitch diagram, an important tool of electrical and computer engineers which goes back to the original individual papers of Veitch and Karnaugh of several decades ago, and is used to lay out computer circuits. The diagram is not a mathematician's tool (most mathematicians have probably never heard of it). Consequently its use represents the confluence of ideas from both mathematics as well as computer science and engineering.

A Karnaugh map, as every electrical engineer should know, is a truth table that has been rearranged to show a geometrical pattern of functional relationships for gating configurations; with this map, essential gating requirements can be recognized in their simplest form. One of the principal problems that confronts a digital designer is the problem of reducing, or minimizing, a Boolean expression, thus permitting the expression to be implemented using fewer gates.

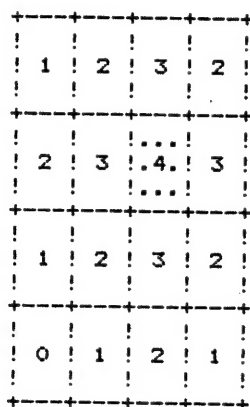


If you ever tried to draw a four-dimensional Venn diagram, you will appreciate the usefulness of the Karnaugh map. The model can be expanded to multiple dimensions, not just four. However, expansion to five dimensions entails a loss of contiguity (all the boxes for each dimension no longer adjoin each other). However, one can retain contiguity for the five dimensions (if necessary) by redrawing each of the boxes as follows:



and then using the lower right triangle to hold the contents for the fifth dimension.

The layered structure of the mathematical model is an important feature that should not be overlooked.



Note that there are four cells at the one level: geometry, algebra, calculus and topology. The six two-level cells represent the confluence of each pair of the preceding dimensions. These cells surround the four sets of three-level cells which form a four-point star with the central cell, which represents the confluence of the four dimensions. In other words, this simple model gives an extremely tight structure to the subject matter of abstract mathematics.

This tight structure is needed if we are going to assume control of abstract math, where some 200,000 theorems (according to an estimate by the late atom bomb mathematician Stan Ulam) are generated yearly. We can visualize that these theorems cause mathematics to expand as a balloon out of control.

A better view is to reverse the image, in which we need a telescope, and consider instead that mathematics continues to find more inner relations so that instead of larger telescopes we need better and better microscopes with finer resolution. In other words, mathematical advances do not make our model obsolete or obsolescent.

Within the framework of the model we can provide

(1) a container for the continuing fruits of mathematical research (which deserves to be covered in intensive detail at a later date), as well as

(2) a framework for the analysis of applied mathematics as used in the exact and inexact

sciences (which will also be examined in detail), as well as

(3) a means to organize the books on your mathematical bookshelves (my 20 calculus books, from Osgood to Apostol, are on the top left shelf), in addition to

(4) a scheme to attempt to anticipate possible future research developments, and finally

(5) the frame to create an outline for a course in mathematics.

The mathematics curriculum would start with an overview of mathematical logic and the nature of a mathematical proof, and then take the one-layer and two-layer and three-layer cells in chronological order, and conclude with the four-layer cell.

I discovered to my surprise, in a chance conversation last month with a Chinese scholar, that Joseph Needham, a biologist, decided in his fifties to investigate the differences between Eastern and Western civilizations and why they had developed along different lines. His immense work, "Science and Civilization in China," which will probably total some 20 separate volumes when completed, is the most ambitious undertaking in Chinese studies during this century. He concluded that the East never developed a technological society because they lacked the notion of a mathematical proof (a notion that in the West goes back to Zeno of Elea in 500 BC and Euclid in 300 BC).

Mathematics in the Greek sense as a logically systematized science, was unknown in ancient China, although a work published in the year 676 contained the result  $3.1415927 > \pi > 3.1415926$ , showing that they could calculate the ratio of the radius to the circumference of a circle to almost seven decimal places.

In 1607 Matteo Ricci (1552-1610) translated the first six books of Euclid's Elements into Chinese. Science and technology were imported by Christian missionaries. Emperor Kang Hsi-Ti, who was in correspondence with Leibniz, asked for the compilation of a book on advanced mathematics with 53 chapters that was completed in 1723.

The first development of Japanese mathematics (Wasan) took place in the 8th century AD. Wasan scholars obtained interesting and significant results, but they pursued mathematics as an art in the Japanese manner rather than as a science in the Western sense.

Wasan had no philosophical background as did the Greek tradition, nor did it have an intimate relation with the natural sciences. Thus it lacked the character of systematized science and dissolved after the introduction of Western mathematics into the school system by the Meizi government (1867-1912).

One of my colleagues attributes the successful introduction of technology into Japan to the existence of their long-time feudal society, in which there had to be an upwards and downwards bond of mutual trust between the administrator and the artisan or technician. When Japan decided to adopt technology, the transition was soon accomplished.

In short: science is prediction, prediction is control, and the language of science rests upon the notion of a mathematical proof.

We have seen the main features of our model. Is it useful? Is it anything more than an intriguing toy?

A proper test of the usefulness of a model of abstract mathematics is: Does it help organize the subject matter of applied mathematics, both in the exact sciences as well as the inexact sciences? This, then, will constitute our next challenge.

### Continued from Page 3

Then we define the items on the menu with their calories:

```
: GREEN-TEA 10 ;      : BLACK-TEA 15 ;
: LICHEE-NUTS 20 ;    : SOUP 25 ;
: KUMQUATS 30 ;       : NOODLES 35 ;
: COOKED-RICE 40 ;    : EGG-ROLL 45 ;
: FRIED-RICE 50 ;    : CHOPSTICKS 0 ;
```

Next we need a word to set the counter to zero, and another to print the total, like this:

```
: START 0 ;      : AMOUNT DUP . ;
```

Now we can calculate the calories this way:

```
START ok
COOKED-RICE 1 BOWL ok
GREEN-TEA 1 POT ok
EGG-ROLL 2 DISHES ok
CHOPSTICKS 1 ORDER ok
AMOUNT 140 ok
```

How does this look, Lee?

L: Well, it is a beginning. But it is obvious that you don't know anything about Chinese cooking. You are probably like most Westerners who order wonton soup, egg rolls, chow mein, chop suey and a fortune cookie and think you are eating a Chinese meal.

Chinese culture goes back some four thousand years, and the art of Chinese cooking goes back with it. Twentyfive hundred years ago Confucius described the enjoyment of food as one of the beautiful and gentle things which contribute to the peace and harmony of society. For thousands of years Chinese men of letters were gourmets. China is perhaps the only country in the world where scholars wrote learned treatises on food and poets wrote cookbooks. The Chinese cuisine, unsurpassed by any other in variety, is said to include some eighty thousand different dishes. As Confucius wrote 2,500 years ago, a man "must not eat what has been crookedly cut, nor any dish that lacks its proper seasoning. The meat that he eats must at the very most not be enough to make his breath smell of meat rather than of rice. As regards wine, no limit is laid down; but he must not be disorderly."

Two dishes that Westerners do know and repeatedly order are chop suey and chow mein. This is a great pity, for while chow mein can be good enough, there is little one can say in favor of chop suey, a dish unknown in China. One explanation of its origin is that the dish was born when the famous 19th Century diplomat Li Hung Chang, traveling in the West as the Chinese

emperor's emissary, got indigestion from rich foreign foods at the banquets he had to attend. He had so agonizing an attack of biliousness following a hard week's banqueting in the United States that his aid Lo Feng-luh suggested a bland diet. Between them the gentlemen thought up the plainest possible dish--a concoction of celery and other vegetables sauteed with a little pork. Thus was chop suey born. If you order it in China, Don, they may not call you a BAI MWOH GUEY or 'white devil' but they will certainly call you a GAOHW BE YIEH MAHN LUN or 'long nose barbarian.'

Here is what the famous Chinese writer Yuan Mei (1715-1797) wrote about cooking:

"Cookery is like matrimony. Two things served together should match. Clear should go with clear, thick with thick, hard with hard, soft with soft... The cooks of today think nothing of mixing in one soup the meat of chicken, duck, pig and goose. But these chickens, ducks, pigs, and geese have doubtless souls. And these souls will most certainly file complaints in the next world on the way they have been treated in this. A good cook will use plenty of different dishes. Each article of food will be made to exhibit its own characteristics, while each made dish will be characterized by one dominant flavor. Then the palate of the gourmet will respond without fail, and the flowers of the soul blossom forth... Don't cut bamboo--shoots with an oniony knife... A good cook frequently wipes his knife, frequently changes his cloth, frequently scrapes his board, and frequently washes his hands. If smoke or ashes from his pipe, perspiration drops from his head, insects from the wall, or smuts from the saucepan get mixed up with the food, though he were a very chef among chefs, yet would men hold their noses and decline."

Did you know that China has five regional styles of cooking-- northern, central, coastal, inland, and southern? The most varied is the southern, or Cantonese, because at the overthrow of the Ming dynasty in 1644 many of the chefs of Peking's Imperial household fled to Canton. On their way south they acquired excellent recipes in each neighborhood, which they later introduced to the kitchens of Canton.

D: Well, Lee, in this book Floegel has a section on vocabularies in Forth which we might be able to use to classify the different styles.

```
: \ IN @ 32 / 1+ 32 *
IN ! ; IMMEDIATE
VOCABULARY CANTON
CANTON DEFINITIONS
: MENU \ Southern
CR ." Roast meat and poultry,"
CR ." lobster, steamed pork and"
CR ." fish dishes, fried rice,"
CR ." Bird's Nest soup, wontons,"
CR ." Shark's Fin soup, Sea Bass"
CR ." with Black Beans. " ;
```

```
VOCABULARY FUKIEN
FUKIEN DEFINITIONS
```

Continued on Page 27

## The Information Age

W.H. Schneider - JACB

Dunn and Bradstreet Credit Services recently conducted a study of computer use in business and industry. They found that the number of computer work stations has increased sixfold over the past two years. By the end of 1988, they estimate that 29 percent of all white-collar workers will use PC's as part of their jobs.

Microcomputers have proliferated due to their ease of use, convenience, and increased productivity. As the number of these individual "desktop information centers" increase so does the need to manage the computer resources. A PC is by definition a stand-alone, personal device. However, a typical business report often requires the skills and data of many people. Information must be disseminated to be truly effective.

The sharing of data and expensive peripherals such as hard drives and laser printers are compelling reasons to connect separate microcomputers (workstations) together. Control and centralization of information processing provide additional benefits. Computer networks are the new growth market for office communications and productivity.

Linking several PC's on a local area network (LAN) or buying a multiuser computer with several terminals may be the best way to get the most effective use of hardware and data. The difference between these two alternatives is small but distinct. If a microcomputer (workstation) executes programs with its own processor and its own memory, it is part of an LAN. A workstation which uses only the processor and memory of a central computer is part of a multiuser system.

A LAN is a system that ties otherwise independent PC's together. It is a collection of microcomputers and peripheral devices linked by a short-range common communications path. LAN's allow users to share files such as databases and spreadsheets and provide a cost effective method for sharing expensive peripherals. They are best suited in office environments in which several people perform related tasks with different computers. Due to cable length restrictions LAN's tend to be confined to a single building or more commonly to a single floor.

In general, a multiuser system ties together more closely than a LAN. Multiuser systems use a time-sharing scheme to link terminals. Each user may pursue tasks independently but it is more likely that they will be engaged in tasks that involve intensive sharing of common data. Multiuser systems are best for small clusters of users that share common data, such as single departments.

Large corporations must not only link PC's together but must tie them into existing corporate resources. The key for

them is networking micros to mainframes. In this case the mainframe becomes the central node of the multiuser network. The various branch nodes are attached with conditioned data lines leased from the telephone company.

Although MS-DOS (IBM) is the operating system standard for PC's no single manufacturer has managed to establish a network standard. IBM is now apparently supporting Unix, having released a version of Microsoft's Xenix for the PC AT. AT&T originally developed Unix for engineering applications on mainframes. Atari announced at the Comdex show in November that they had signed a license with AT&T for the Unix System V operating system. Infoworld (December 23, 1985) said that AT&T will distribute Atari ST's, specially modified as low-end Unix terminals.

The Unix operating system is gaining popularity due to many of its features. It has the following characteristics which are ideal for networks:

Multi-user - Many users can simultaneously access the computer.

Time-sharing - Each user is allocated segments of CPU time.

Multi-tasking - The system can perform multiple processes at the same time. A user can have several processes stored in memory while executing another one.

In addition, Unix is easily adaptable to other hardware. It can be installed on a micro, mini, and mainframe computer with more ease than other operating systems.

Whatever the size of the business or the operating system, the future lies in very-high speed networks that intergrate voice and data and blur the distinctions between the telephone and the computer. Broadband, fiber-optic-based networks are the future. Broadband refers to the transmission method where the signals can be modulated (separated) into different frequencies. This permits voice, data, and video to be transmitted over the same pathway (cable). With this evolution though, the whole notion of a stand-alone PC vanishes.



## Or, Does It Really Work?

Did you buy the Home Integrator, only to find that it became a program disk disintegrator? Did Nightmare become a nightmare when you tried to run it? Did Silent Service give you the silent treatment? Did Fractions run only a fraction of the time? Is your copy of Diskey, frisky--or lethargic? How many times have you bought software that wouldn't run, or ran marginally? Did you buy, try...and then curse, or worse? If so, you have been zapped by the Bad Software Bug!

As a result of the expenditure of much time and money, and at the cost of much aggravation; I make the following humble suggestions:

- 1) Read the package carefully (although many manufacturers hide their caveats inside the box).
- 2) Ask to try the software in the store (most have the ability to re-shrink-wrap the product).
- 3) Ask specifically about the suitability of the product with your own particular equipment configuration.
- 4) Be sure (before you purchase) that the store's policy allows for the return of defective or non-performing ware.
- 5) Read magazine reviews about the ware that you may be interested in purchasing (remembering that the manufacturer may be an advertiser, and have supplied the trial ware for no charge).
- 6) Divide all representations pertaining to power, graphics (a great buzz-word!), ease of use, speed, and fun-- by a factor of four.
- 7) Attend JACG meetings and read the Newsletter.

Next in NOISE from NOYES: Is day wear,  
Is evening wear, Is FREEWARE; or, a look at  
the Public Domain.

[illegible]

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# 5205T

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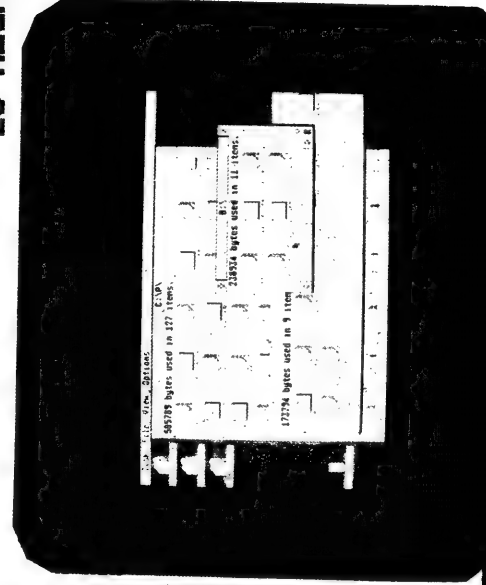
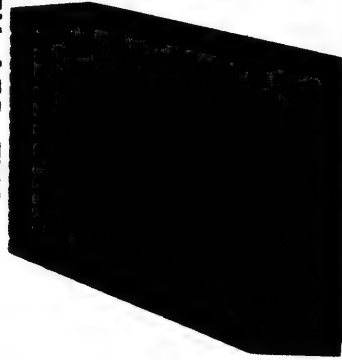
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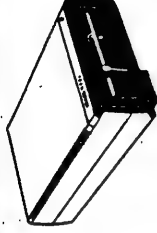
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Son Of  
An Interesting  
Observation

by Patrick C. Madden, II - JACG

The thing I liked best about Roy Lent's article in the February issue was that his program was only nine statements long. Finding out what he was talking about wasn't going to waste much of my time, so I tried it. Pretty neat! Is it a ball pressing through a wall of rubber bands? Who knows?

After thinking about it for a while, I realized that the program was drawing a series of 180 lines from points on a vertical reference line in column "Q" to various points on a circle whose center is at column 150, row 100. This is near the center of the Graphics 8+16 screen which is 320x192 pixels. The circle has a radius of 80 pixels and is defined by the sin, cos functions. The "circle" is really an ellipse because pixels are not quite as wide as they are tall. (I can correct this on my monitor by multiplying the X coordinate by 1.16.)

Anyway, I decided to experiment by drawing lines from one point on the rim of the circle to another. (Changing the GOTO 40 in Roy's program to GOTO 50 will accomplish this.) Hey, I thought, if these lines come back to the starting point, they either form a polygon or a multipointed star of some sort. Making the lines come back to the starting point is easy if you make the angle "B" increment in fractions of Pi (3.14159...). Specifically, if you want an octagon, increment B by  $2\pi/8$  or  $\pi/4$ . Other polygons can be obtained using  $2\pi/N$  as the increment. That's what this program does.

```
1 REM POLYGON
2 REM BY P C MADDEN
3 REM
10 ? CHR$(125):COLOR 1
20 GRAPHICS 8:POKE 718,14:POKE 709,0:POKE 712,14
30 X1=159:REM POSITION OF
40 Y1=79:REM CENTER OF POLYGON
50 R=79
60 PI=ATN(1)*4
70 ? "HOW MANY SIDES";:INPUT N
80 X=INT(X1+R*1.16)
90 PLOT X,Y1
100 FOR I=1 TO N
110 Y=Y1+SIN(2*PI*I/N)*R
120 X=X1+COS(2*PI*I/N)*R*1.16
130 DRAWTO INT(X+0.5),INT(Y+0.5)
140 NEXT I
150 GOTO 70
```

This program is twice as long as Roy's (how'd that happen?) but does something much simpler. I used Graphics 8 to get the text window and allow one to draw polygons on top of one another. If you want to use graphics 24, put the graphics statement after the input statement to avoid an ERROR 141 at line 90.

Obviously, there is some value of N, above which we will observe no further change in the figure because we have reached the maximum resolution of the screen. Can anyone tell me what that value is?

=====

JACG Membership

=====

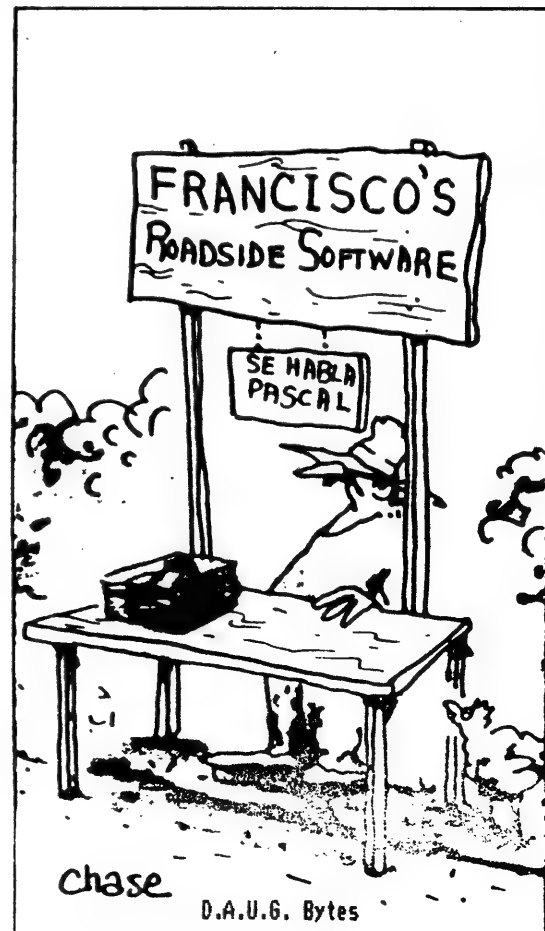
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# THE REPORT CARD

by Frank Pazel - JACG

## 40 Great Flight Simulator Adventures BOOK REVIEW

If you are an airplane coo-coo like me you rush out to try every piece of software that purports to simulate flight. I've tried them all, from BASIC's Red Baron through F15 Strike Eagle. As games they were okay. Some, in fact, were pretty darn good. Like Solo Flight and Hellcat Ace. They were engrossing enough to feel like I was in the cockpit part of the time. But they just didn't cut it as a real-time, serious, watch-the-panel simulator.

Admittedly, I'm a tough critic. I am a private pilot and my first engineering job was with Ed Link in Binghamton working on the 707 flight simulator for Boeing. I don't expect that kind of realism from 48K but I had hopes...

Then, one day about three years ago, a friend of mine with an IBM invited me to his house to see and try Flight Simulator. I was impressed. The panel was realistic, the response times were accurate, and the idea of being able to toggle around for a looksee out of the windows was exciting. Input, unfortunately, was exclusively via keyboard but the promise was there. Could I dare hope that some day the Atari....?

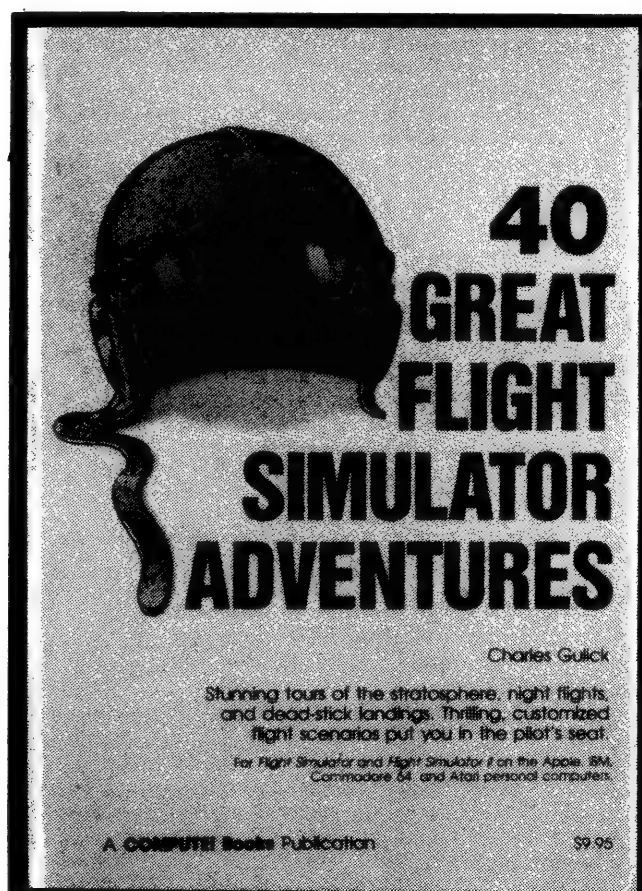
Well, it happened. Flight Simulator II, in all its glory, rolled out of SubLogic's hangar over a year ago. I plunked down my fifty dollar bill and hellbent for home to see how great computer flying was now going to be.

Sadness set in. If really learning to fly took as much energy and generated as high frustration levels as this program did we surely would not have the legendary crowded skies. It is a beautiful program, a complete program, a program that leaves little to be desired. Except one thing. It's too damned hard to learn, or worse yet, to just fly at a beginner's level. Pilots would call this airplane "unforgiving." It's just too easy to lose it. I got a lot of hours up in the wild blue. For the first many hours with FSII I managed to quickly enter a series of secondary stalls which were unrecoverable. Too many times the screen went blank and told me CRASH!!! (CRASH was embarrassing enough but the extra exclamation points was rubbing it in).

Like most people I don't like to be punished for something I really didn't do. As a result, I put all of the various

documents and two disks back in the box and let it literally collect dust. Every so often (like two-three months) I would muster enough interest and curiosity to boot it up again. Each time I got madder. Even setting the editor to the Easy Flight Mode didn't help. With old time flight training behind me, including the no longer required spin recovery sessions, I certainly felt stupid.

Browsing through Barnes & Noble's Times Square store a few months ago a single copy of a wirebound book caught my eye. The leather flying helmet on the cover did the trick. When the title "40 Great Flight Simulator Adventures" flew up at me, and I saw it was a Compute! book for only \$9.95 my heart skipped a hopeful beat. A cursory look at the back cover revealed that it was intended as a companion piece for my heinous Flight Simulator II and the Atari was identified as one of the valid computers. Sold.



The book is divided into three parts: the Foreword, which pays appropriate tribute to FSII software author Bruce Artwick (Night Mission Pinball); the Introduction and Instructions, which explains the book's intentions and organizational structure; the Adventures, all forty of them. Writer Gulick has done all of the hard work needed to make FSII behave. He has named each flight in a descriptive and creative way and follows with the specific numbers needed for the editor to put you exactly where you need to be to pull it off. You can get most of these figures from the flight charts but



that takes time and could be frustrating for a non-pilot. You are also given things you would not so easily know, like heading, airspeed, time, season and wind. Some adventures, like "We Aim To Please" can be flown hands-off. Punching in the numbers will automatically take you for a ride directly between the World Trade Center towers. The view can be invigorating, especially through left and right side windows.

Each trip is divided into clearly defined steps, each accompanied by a picture which indicates the point where you take over the controls, calls your attention to some view you should take a look at, or signals that you have to initiate some action (like a heading change). Gulick sprinkles the tours with local color and considerable humor. One flight takes you down to 76 feet above ground level to fly between the superstructure and the roadway of Manhattan Bridge. Title: A Game of Bridge. If that doesn't cost you your license "Two on an Island" lets you land, see the sights on Liberty Island (he mistakenly calls it Ellis), and execute a short field takeoff. This fantasy works on the computer but could cost you more than just a wrinkled Piper if you actually tried it.

Throughout each tour the chatter continues, as if the world's best Flight Instructor and tour guide were in the right seat. The running comments are not only invaluable, they are often sage and loaded with surprises ("Strolling" puts you immediately in the middle of a place you absolutely shouldn't - couldn't be)! The wire binding allows you to set the book in your lap or near the keyboard so you aren't too distracted when looking for your next instruction. An occasional push of the P key, to pause the action, won't hurt and gives you time to catch your mental breath before proceeding.

"40 Great Flight Simulator Adventures" won't cure the basic problem of Flight Simulator II. The program, in my opinion, needs to be saddlebroke so any greenhorn (or professional pilot) can hop in and get a simple, satisfying ride. That is SubLogic's problem and I am not the first to point it out. A recent magazine article named FSII one of the best pieces of software written and simultaneously took it to task for its difficulty of learning. However, Charles Gulick's book will be a considerable comfort and aid and might be just what is needed to get you over some of the initial rough spots in control. It has helped me so that now I only CRASH!!! about three times out of four.



Don't let the Newsletter crash!  
Contribute an article this month.

## Crash the Sears Tower

By Donald Forbes -- JACG

The Sears Tower in Chicago loomed straight ahead of me. I kept flying my little Piper 181 Cherokee Archer at about 200 feet above the ground heading straight for the tower. I moseyed along at about 80 knots (that's almost 90 miles an hour) as the tower started to fill my front windshield. Suddenly...everything went black...

CRASH ! ! !

I had taken off a few moments earlier from Meigs Field -- a small peninsula just off the Chicago shore in Lake Michigan -- from runway 36 (meaning that the runway was on a heading of 360 degrees on the compass, or straight north). The time was about noon. The weather was perfect. Not a cloud in the sky. The kind of weather pilots refer to as VFR weather, for visual flight rules, with CAVU (ceiling absolute, visibility unlimited).

I climbed into the cockpit of my small Piper, raised the elevators a couple of notches, and gave her full throttle. She took off down the runway and once I was at 600 feet I banked her slightly to the left, keeping the Sears tower in view. Then I cut the elevators back and then eased back on the throttle. I adjusted the ailerons to bank easily to the left so as to come around the tower.

Then I lined up on the tower and headed straight for it. The tower came up right ahead, but I had given the Piper too much left pedal. I flew right past the left side of the building.

So I decided to come around again and then approach the tower in a long straight glide. The tower grew larger and larger. I could see I was straight on course. A direct hit!

Time for an eggnog refill.

This was the third Piper I managed to crash, a single engine, 148 mph, non-retractable gear aircraft equipped with a good set of avionics but without a constant speed prop. The first one I lost after taking off from Meigs Field. I had adjusted the elevator setting but only gave her half throttle. The Piper took off down the runway and started to climb, but she did not have enough momentum, and I splashed right down into Lake Michigan.

The second Piper that I crashed slammed into the streets of Chicago. I was trying to bank too steeply to the left--the Piper started to dive, the engine roared, and the speedometer raced up to a scary 140 knots. I tried to level out, but it was too late. CRASH ! ! !

Here, let me pour you another glass of eggnog!

On my next trip I picked up another Piper at La Guardia airport to take a look at the sights of New York. The weather once again was beautiful--the bubble of smog that covers New York City every time I go to work was missing today.

I adjusted the elevators and gave the plane full throttle, climbed to 500 feet, and then cut back the engine. I could not see any landmarks so I decided I needed more altitude. I pushed the throttle forward once more and climbed to 6000 feet. I still could not see any landmarks. Then I looked out the back window. Success! I now had a clear view of the World Trade Center in the distance and the outline of the island of Manhattan. I had overflown the city by mistake, and was headed west over New Jersey.

When I reached a point over my house in Florham Park I turned around and headed back for the city. There before me was the Statue of Liberty, as well as the twin towers of the World Trade Center where I catch the PATH every day, the Manhattan Bridge, the Empire State building, and the wide north and south avenues.

I was flying around the midtown buildings when once again I gave the Piper too much rudder. She lost altitude and before I could recover I found myself with a roaring racing engine in a screaming dive. I crashed a few seconds later in the streets between the Empire State building and Downtown.

I simply must take the time to learn to control the ailerons and the rudder pedals. Then I can attempt to buzz the Statue of Liberty, fly between the two towers of the World Trade Center, zoom under the Manhattan bridge, and finally crash into the Empire State building.

My next trip will take me to Los Angeles and then on to Seattle, where I propose to fly my Piper straight into the Space Needle. This may take some practice, but by the time I get there I will be ready. I might even make it on the first try!

Here, won't you have just one more glass of eggnog?

I was not really supposed to crack up all these expensive airplanes. Flight Simulator II for the Atari was actually my son's Xmas present. But the temptation was too great. The plane almost flies itself. And disk number two, the scenery disk, gives you air views of not only Chicago but also New York, Los Angeles and Seattle.

Over Chicago you can see not only the Sears Tower but also the John Hancock building and also highway I-57 that leads to Champaign. Over New York you see the Statue of Liberty and the twin towers as well as the whole island of Manhattan. The view from Los Angeles includes San Diego, Santa Monica, the Harbor and Ventura freeways, Marina del Rey, Santa Monica and the Santa Ana mountains. In Seattle you get to see the Space Needle, Lakes Washington and Sammamish, Mercer Island, the Mercer Island and Evergreen Point floating bridges, as well as highways I-405 and I-5 down to Tacoma and Mount Rainier.

The default for take-offs is Meigs Field in Chicago. But if you can easily select one of the other locations. On the initial menu, instead of the demonstration, you must select flight (or REALITY) mode. Then you must insert the Scenery Disk and then type CTRL E to display the available scenery areas and to 'log in' the scenery disk.

Next you must go into the Editor by pressing the ESC (escape key) which brings

up two pages of menus. Now you can change your coordinates to one of the other locations. La Guardia, for example, is at North 17091 and East 21026 and altitude 22. If you plug in these new numbers, and hit return after each one, you will find as you prepare for take-off that you are now at La Guardia. You will find the proper coordinates at the bottom of the New York and Boston area chart. However, you have to climb to altitude (as I discovered) to recognize the landmarks.

We might as well finish up the eggnog. Just enough for one glass apiece!

P.S. When I interviewed Eddie Rickenbacker years ago I never dreamed that I, too, could one day become a World War I ace. The Piper comes equipped complete with an attack radar screen. This radar has been provided to compensate for the viewing restrictions of the 3D screen. If you thought radar was invented in World War II, then this game just shows you how mistaken you can be. Right now I am saving this one for the post-eggnog season and then, after some spins, hammerhead turns, split-S turns, English bunts, barrel rolls, Immelman turns and outside loops, I am going to give it to the Red Baron right in the kisser!

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\*\*\*\*\*

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# ROBOTICS... THE FIRST STEP

by W. Brandt - JACG

At first glance, the field of robotics seems to be extremely technical and difficult to understand. However, closer inspection reveals that by starting at the elementary level, and by taking it a step at a time, learning about robotics is no more difficult than learning about anything else. A group of JACG members who were interested in taking this first step have gotten together to start the JACG Robotics SIG (Special Interest Group). The group's first project was to develop a simple mobile platform that could be controlled using the Atari computer. Thanks to the efforts of many people such as Doug Van Hook, Bob Knoblauch, Sam Cory, Werner Heck, and Marty Hollander, the project was successful and is being presented to the general JACG membership as an example of how to get started in robotics. The project can be looked at as having three separate components:

1. Interface Unit (connects computer to mobile platform)
2. Mobile Platform
3. Software

## Interface Unit

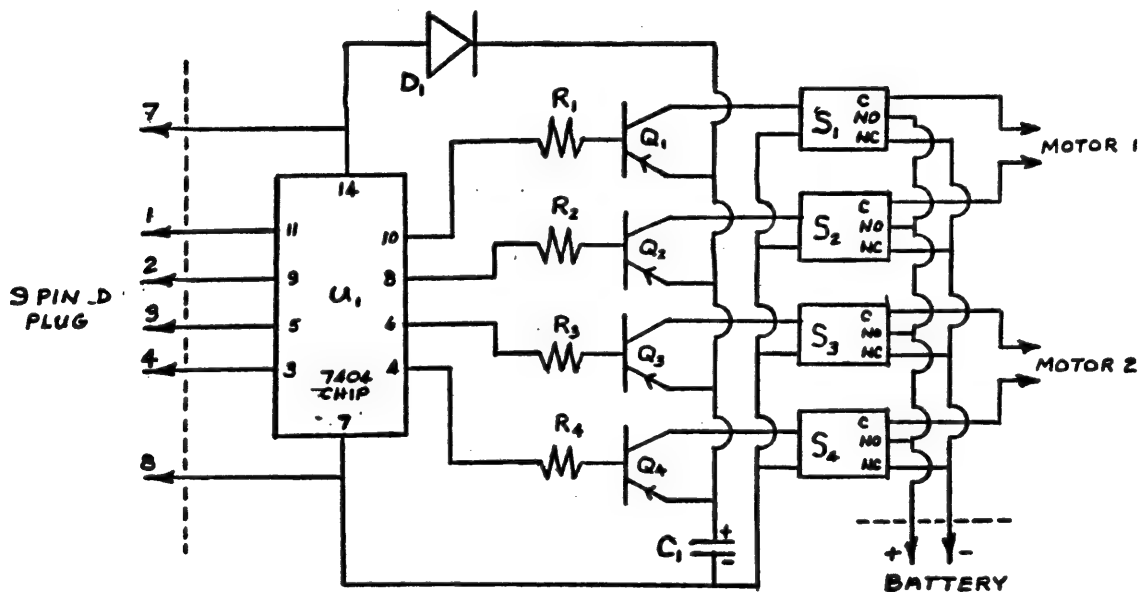
In order to be compatible with as many Atari computers as possible, it was decided to use the joystick ports for sending signals from the computer to the external device (in this case the mobile platform). Each joystick port has nine pins, four of which can be used for sending signals from the computer (see Diagram 4). These pins can be used to send signals to four relays, and the relays in turn can be used to turn four electrical devices on or off. For the mobile platform interface unit the four relays are used to provide steering by allowing the two drive motors to be turned on for "forward" or "reverse" (steering similar to a tank). The other joystick port is used for input signals and allows the mobile platform to be guided using a joystick.

The list of parts in Table 1 and the electrical circuit diagram shown in Diagram 1, are designed to be used with a low amperage six volt battery (i.e., similar to four 1.5 volt flashlight batteries connected in series). As long as the battery is a low level power source there should be no danger to the computer. The parts shown in Table 1 are generally available at Radio Shack stores; however, there are many other sources of equivalent parts. The ribbon wire should have at least six separate wires and should be at least fifteen feet long (to allow for movement of the mobile platform). The circuit board is an alternate to connecting all the parts with separate wires. The etching kit contains enough material to produce eight circuit boards.

Having all the parts, and the circuit board, is only half the story. The other half is to solder all the parts to the circuit board. To help position the parts on the circuit board please note that (1) the diode has the identifying marking ring on the end facing the transistor, (2) the capacitor has the plus (+) side facing the transistor, (3) the transistors have the base wire (marked "b" in Diagram 2) facing the resistors, and (4) the 7404 chip usually has a slot to indicate the end with the 1 and 14 pins (see Diagram 4). After the parts have been soldered to the circuit board, the circuit board is attached to one end of the ribbon wire and the 9 Pin D Connector is connected to the other. Diagram 4 shows the pin numbers for the joystick port as you look at the computer (the same as looking at the back of the plug).

As a final touch the entire interface unit can be placed inside a small plastic container (from the local five and ten) to protect it from the elements and to make it easier to mount on the mobile platform. If you think you may need help for any of this, there is a publication called "Getting Started in Electronics" by Forrest Mims. This publication is also available at Radio Shack for under five dollars.

**Diagram 1**  
**Interface Circuit Diagram**

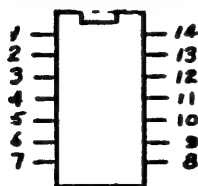


**Diagram 2**  
**Transistor Wiring**



c = collector  
b = base  
e = emitter

**Diagram 3**  
**7404 Chip Pin Designation**



**Diagram 4**  
**Joystick Port Pin Configuration**

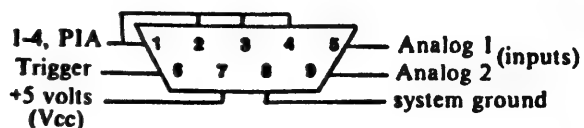


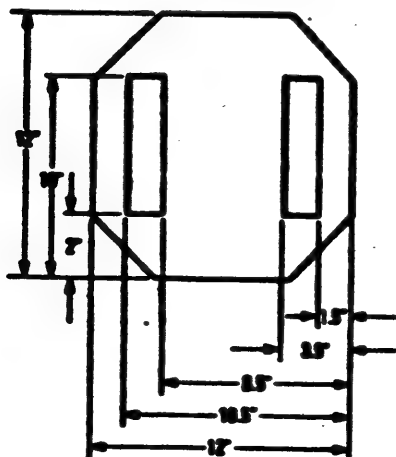
Table 1  
Parts for Interface Unit

Circuit Letter	Quantity	Description	Radio Shack Part Number	Approximate Cost
C <sub>1</sub>	1	Capacitor	#272-1012	\$0.49
D <sub>1</sub>	1	Diode	#276-1101	\$0.49
U <sub>1</sub>	1	7404 Chip	#276-1802	\$0.99
R <sub>1</sub> to R <sub>4</sub>	4	Resistors	#271-020	\$0.40
S <sub>1</sub> to S <sub>1</sub>	4	Relays	#275-243	\$9.96
Q <sub>1</sub> to Q <sub>4</sub>	4	Transistors	#275-1604	\$1.89
	1	9 Pin D Connector	#276-1538	\$2.49
	4	Relay Sockets (optional)		-
	1	7404 Chip Socket (optional)		-
	15 ft.	Ribbon Wire		\$5.00
	1	Etched Circuit Board Kit		\$8.95
Total				\$30.66

## Mobile Platform

The mobile platform, as shown in Diagrams 5 and 6, is simply a piece of wood with two big wheels used for propulsion and steering, and with two casters for stability. For additional information on this platform see the article "Building a Robot From the Ground Up" by Mark J. Robillard in the September 1985 issue of "Radio Electronics" magazine. To build the platform requires the parts shown in Table 2. The interface is also located on the platform and is connected to the drive motors and battery. If alligator clips are used for these connections it will be easier to remove the interface to use with other devices or if adjustment or repairs are needed.

**Diagram 5**  
**Mobile Platform**  
**Base Dimensions**



**Diagram 6**  
**Mobile Platform**  
**Side View**

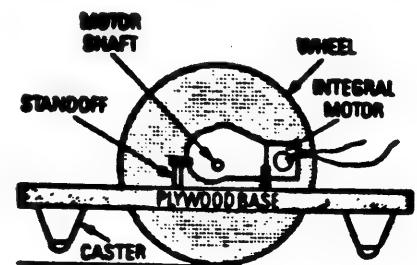




Table 2  
Parts for Mobile Platform

Quantity	Description	Source	Approximate Cost
1	Plywood (12"x12")	Channel	\$2.00
1	Battery (6 volt)		\$3.95
1	Motor (set of 2)	H. R. Corp.	\$4.95
2	Wheels	H. R. Corp.	\$3.00
2	Casters	Channel	\$4.95
Total			\$18.85

Herbach Rademan Corporation  
401 E. Erie Avenue  
Philadelphia, Pennsylvania 19134  
tel. (215)-426-1708

### Software

Two separate software programs have been developed to control the mobile platform. The Assembly Language program, Listing 1, uses Joystick Port 2 to send signals to the interface, and uses a joystick connected to Joystick Port 1 to direct the motion. The BASIC program, Listing 2, is just the reverse. It uses Joystick Port 1 to send the signals to the interface, and assumes the joystick is connected to Joystick Port 2. In addition to directing the motion of the mobile platform the BASIC program will also store the "path" taken by the mobile platform so that it can be repeated again. To start the recording function, press the joystick trigger while pressing the stick forward. Pressing the trigger again stops the recording function. To play back the motion, press the joystick trigger while pulling the stick backward. The "path" is stored in RAM and is only remembered as long as the computer is turned on (the Robotics SIG members are currently working on variations which will allow the "path" to be stored on a disk).

This project is at a very elementary level; nevertheless, it is a good example of how to get started learning about robotics. The interface unit was designed for the mobile platform, but it can also be used to control a wide variety of electrical devices. All it requires is a little imagination and experimentation. To help encourage interest in robotics, the Robotics SIG is considering putting together "packages of parts", including the etched circuit boards, for the interface unit and making them available to JACG members. If you are interested, contact Sam Cory, the robotics meetings chairman, or Bill Brandt, the robotics newsletter editor.

Sam Cory  
18 Pinebrook Road, P.O. Box 7  
Towaco, New Jersey 07082

W. E. Brandt  
27 Mohawk Trail  
Westfield, New Jersey 07090

Listing 1  
Control Program in Assembly Language  
 By Douglas Van Hook

```

10 * WRITTEN BY DOUG VAN HOOK
20 * JERSEY ATARI COMPUTER GROUP
30 * ROBOTICS SIG 12/1/85
0000 40 .OPT OBJ
0000 50 *= $5000
5000 4C0650 60 JMP START
      =0278 70 STICK0 = $0278
      =0284 80 STRIG0 = $0284
      =0279 90 STICK1 = $0279
      =0003 0100 OPEN = $03
      =0008 0110 QWRIT = $08
      =000B 0120 PUTCHR = $0B
      =000C 0130 CLOSE = $0C
      =0020 0140 IOCB2 = $20
      =0342 0150 ICCOM = $0342 ; CONTROLS CIO
      =E456 0160 CIOV = $E456
5003 443A9B 0170 DEVNAM .BYTE "D:",EOL
      =009B 0180 EOL = $9B ; END OF LINE CHAR
      =034A 0190 ICAX1 = $034A
      =034B 0200 ICAX2 = $034B
      =D302 0210 PACTL = $D302
      =D300 0220 PORTA = $D300
5006 0230 START
5006 A938 0240 LDA #56 ; SET BIT 2 TO 0
5008 8D02D3 0250 STA PACTL ; PORT A CONTROL
500B A9F0 0260 LDA #240 ; SET DIRECTION CONTROL
500D 8D00D3 0270 STA PORTA ; JOYSTICK 1 & 2
5010 A93C 0280 LDA #60 ; SET PORT CONTROL
5012 8D02D3 0290 STA PACTL ; TO I/O MODE.
5015 0300 READSTK
5015 AD7802 0310 LDA STICK0 ; CHECK STICK #1.
5018 C90F 0320 CMP #$0F ; IS STICK STRAIGHT UP?
501A F035 0330 BEQ STRAIGHT ; IF SO READ AGAIN
501C C907 0340 CMP #$07 ; RIGHT TURN?
501E F011 0350 BEQ RIGHT
5020 C90B 0360 CMP #$0B ; LEFT TURN?
5022 F015 0370 BEQ LEFT
5024 C90E 0380 CMP #$0E ; FORWARD?
5026 F019 0390 BEQ UP
5028 C90D 0400 CMP #$0D ; REVERSE?
502A F01D 0410 BEQ DOWN
0420 * THIS DELAY PERMITS TESTING PINS OF
      STICK #2 WITH MULTITESTER
502C A005 0430 CONT LDY #$05 ; DELAY FOR TESTING
502E 4C1550 0440 JMP READSTK ; READ JOYSTICK AGAIN
      0450 *
5031 A25F 0460 RIGHT LDX #$5F ; LIGHT PIN B,D OF
      STICK #2
5033 8E00D3 0470 STX PORTA ; FOR RIGHT TURN

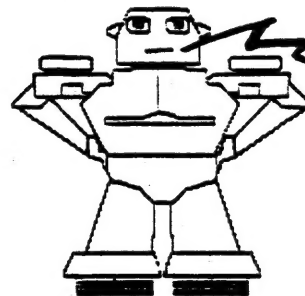
```

5036 4C2C50	0480	JMP CONT	; CONTINUE
	0490 *		
5039 A2AF	0500	LEFT LDX #\$AF	; LIGHT PIN A,C OF
			STICK #2
503B 8E00D3	0510	STX PORTA	; FOR LEFT TURN
503E 4C2C50	0520	JMP CONT	; CONTINUE
	0530 *		
5041 A29F	0540	UP LDX #\$9F	; LIGHT PIN A,D OF
			STICK #2
5043 8E00E3	0550	STX PORTA	
5046 4C2C50	0560	JMP CONT	
	0570 *		
5049 A26F	0580	DOWN LDX #\$6F	
504B 8E00D3	0590	STX PORTA	
504E 4C2C50	0600	JMP CONT	
5051	0610	STRAIGHT	
5051 A200	0620	LDX #\$00	
5053 8E00D3	0630	STX PORTA	
5056 AC2C50	0640	JMP CONT	

Listing 2  
Control Program in BASIC  
 By Robert Knoblauch

```

10 POKE 54018,56
20 POKE 54016,15
30 POKE 54018,60
40 DIM Z(1000)
80 IF STRIG(1)=1 THEN 80
90 IF STRIG(1)=0 THEN 90
95 REM RECORDING
100 A=STICK(1)
105 IF STRIG(1)=0 THEN 300
110 IF A=15 THEN Z(X)=0:GOTO 200
120 IF A=14 THEN Z(X)=9:GOTO 200
130 IF A=13 THEN Z(X)=6:GOTO 200
140 IF A=11 THEN Z(X)=10:GOTO 200
150 IF A=7 THEN Z(X)=5:GOTO 200
170 GOTO 100
200 POKE 54016,Z(X)
210 FOR Y=1 TO 2:NEXT Y
230 X=X+1
240 GOTO 100
300 POKE 54016,0
410 IF STRIG(1)=1 THEN 410
415 IF STRIG(1)=0 THEN 415
420 A=STICK(1)
425 REM START RECORDING ROBOT PUSH FOR.
430 IF A=14 THEN RUN
435 REM START MOVING ROBOT PULL BACK
440 IF A=13 THEN 460
450 GOTO 410
460 IF STRIG(1)=1 THEN 460
470 FOR XX=0 TO X
480 POKE 54016,Z(XX)
490 FOR Y=1 TO 11:NEXT Y
500 NEXT XX
510 GOTO 300
  
```



YOU BETTER 'GIVE A BIT'  
 THIS MONTH OR I'M GOING  
 TO COME AND GET YOU!!!

```
: MENU \ Coastal
CR ." Seafood, clear light soups,"
CR ." paper-thin pancakes, "
CR ." egg rolls, suckling pig. " ;
```

#### VOCABULARY HONAN HONAN DEFINITIONS

```
: MENU \ Central
CR ." Yellow River carp, Sweet and"
CR ." Sour Fish, Pork in Cream of"
CR ." Rice, sweet and sour dishes"
CR ." with rich seasonings." ;
```

#### VOCABULARY SZECHWAN SZECHWAN DEFINITIONS

```
: MENU \ Inland
CR ." Chicken and hot peppers,"
CR ." Szechwan Duck, deep-fried"
CR ." chicken wrapped in paper,"
CR ." vegetables in chicken fat." ;
```

#### VOCABULARY SHANTUNG SHANTUNG DEFINITIONS

```
: MENU \ Northern
CR ." Peking Duck, Chicken Velvet"
CR ." Mo Shu Pork, wine-cooked meats,"
CR ." Mongolian Roast Beef." ;
```

The word MENU now has different meanings depending on which vocabulary we choose. For example, if we type  
CANTON MENU  
we will get the Cantonese version. But why are you offering such a large assortment of foods, Lee?

L: You must understand, Don, that Chinese cuisine has been destroyed in China by the revolution, and would be dead today if it were not for the many custodians of its secrets who got out in time, taking with them priceless knowledge. We have the strange result that Chinese cooking still lives and flourishes, but it is not to be found in China. It is in the West and those Eastern countries that are still free. Chinese cuisine, surviving the nation that created it, has become the most distinguished exile in history.

Chinese food is not fattening food. Cattle are used as beasts of burden, so there are no dairy products. Butter, cheese and milk are practically unknown. The Chinese created their own "cow" from the soybean and transformed it in innumerable ways. Furthermore, eating sweets is not a Chinese habit, which is one reason that Chinese women are able to keep their figures well beyond middle age.

D: Well, Lee, we could make a small change to the waist-watchers program and use it to total up the customer's bill. For example, instead of using  
: AMOUNT DUP . ;  
we could change that to  
: TOTAL-BILL S->D <# # # 46 HOLD  
#S 36 HOLD #> TYPE ;  
so that instead of counting calories that the customer consumes we could count the pennies that he owes us.

Floegel also points out that we can use the computer to act as a cash register. Here is one way that we can do it.

```
: CURSOR ( n1 n2 - )
\ position the cursor
85 ! 84 C! ;
: NUMBER-TO-STRING ( d - a n )
<# # # 46 HOLD #S 36 HOLD #> ;
: PRINT-WITH-DOLLAR-SIGN
\ adjust the printout to
\ the length of the string
2DUP NUMBER-TO-STRING DUP 34
SWAP - 1 CURSOR TYPE ;
: CLEAR-SCREEN 5 2 CURSOR
20 0 DO 32 EMIT LOOP
4 2 CURSOR ;
: $ ( - d )
\ NUMBER converts string to
\ double precision number
13 WORD HERE NUMBER D+
PRINT-WITH-DOLLAR-SIGN
CLEAR-SCREEN QUIT ;
: CASH-REGISTER
125 EMIT 1 2 CURSOR ." Cash:" 0.
PRINT-WITH-DOLLAR SIGN
4 2 CURSOR ." Input:" 10 10
CURSOR ." Teahouse of the "
12 10 CURSOR ." September Morn "
4 2 CURSOR QUIT ;
```

We enter a dollar sign ( \$ ) followed by a space followed by a number for the amount of the bill which includes a decimal point. Then the cash register will add up the amounts.

That's not all, Lee. Floegel has a number of other ideas...so stay tuned.



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**March 1986**

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